



03500.015727.

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

TAKEO TSUKAMOTO

Application No.: 09/941,780

Filed: August 30, 2001

For: ELECTRON-EMITTING DEVICE,  
ELECTRON-EMITTING  
APPARATUS, IMAGE DISPLAY  
APPARATUS, AND LIGHT-  
EMITTING APPARATUS

Examiner: D. H. Vu

Group Art Unit: 2821

January 13, 2003

Commissioner for Patents  
Washington, D.C. 20231

**Match & Return**

SECOND SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Sir:

In compliance with the duty of disclosure under 37 C.F.R. § 1.56 and in accordance with the practice under 37 C.F.R. §§ 1.97 and 1.98, the Examiner's attention is directed to the documents listed on the enclosed Form PTO-1449. Copies of the listed documents are also enclosed.

For a concise explanation of relevance for various non-English documents, the Examiner is directed to the corresponding English-language abstracts, English translations, and/or English-language counterparts listed in association with the corresponding non-English documents in the attached Form PTO-1449.

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For the concise statement of relevance of non-English document 2000-277003, the Examiner is respectfully referred to English-language counterpart document US 2002/136896.

For the concise statement of relevance of non-English documents 04-212236 and 03-295131, the Examiner is respectfully referred to English-language counterpart documents 5,192,240, 5,214,346, and A1 443 865.

For the concise statement of relevance of non-English documents 05-159696 and 05-198253, the Examiner is respectfully referred to English-language counterpart documents 5,382,867 and A1 535 953.

For the concise statement of relevance of non-English document 05-274997, the Examiner is respectfully referred to English-language counterpart document 5,612,587.

For the concise statement of relevance of non-English document 11-232997, the Examiner is respectfully referred to English-language counterpart documents 6,313,572 and A1 936 650.

For the concise statement of relevance of non-English document 10-289650, the Examiner is respectfully referred to English-language counterpart documents 6,135,839 and A1 871 195.

The Examiner's attention is also directed to the following U.S. Applications:

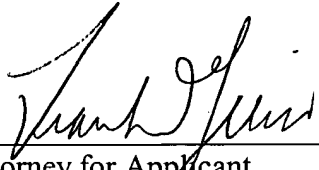
<u>APPLICATION NO.</u>	<u>FILING DATE</u>	<u>GROUP ART UNIT</u>
09/178,680	10/26/98	2879
09/865,698	5/29/01	2821
09/941,595	8/30/01	2879
09/941,642	8/29/01	2879
09/640,643	8/29/01	2852

A copy of each cited application is enclosed.

It is respectfully requested that the above information be considered by the Examiner and that a copy of the enclosed Form PTO-1449 be returned indicating that such information has been considered.

Applicant's undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address given below.

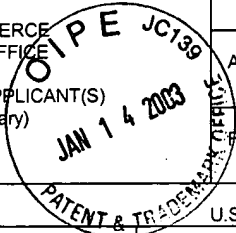
Respectfully submitted,

  
\_\_\_\_\_  
Attorney for Applicant  
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FITZPATRICK, CELLA, HARPER & SCINTO  
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NY MAIN\_#318236v1

FORM PTO 1449 (modified)			ATTY DOCKET NO. <b>03500.015727.</b>			APPLICATION NO. <b>09/941,780</b>		
U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE			APPLICANT <b>Tak o Tsukamoto</b>					
LIST OF REFERENCES CITED BY APPLICANT(S) (Use several sheets if necessary)			FILING DATE <b>August 30, 2001</b>				GROUP <b>2821</b>	
U.S. PATENT DOCUMENTS								
*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
		<b>5,773,921</b>	<b>06/30/98</b>	<b>Keesman et al.</b>	<b>313</b>	<b>309</b>		
		<b>5,973,444</b>	<b>10/26/99</b>	<b>Xu et al.</b>	<b>313</b>	<b>309</b>		
		<b>5,935,639</b>	<b>8/10/99</b>	<b>Sullivan et al.</b>	<b>427</b>	<b>78</b>		
		<b>4,956,578</b>	<b>9/11/90</b>	<b>Shimizu et al.</b>	<b>315</b>	<b>3</b>		
		<b>5,185,554</b>	<b>2/9/93</b>	<b>Nomura et al.</b>	<b>313</b>	<b>495</b>		
		<b>6,448,709</b>	<b>9/02</b>	<b>Chuang et al.</b>	<b>313</b>	<b>497</b>		
		<b>6,204,597</b>	<b>03/01</b>	<b>Xie et al.</b>	<b>313</b>	<b>310</b>		
FOREIGN PATENT DOCUMENTS								
		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT	
		<b>WO 89/07163</b>	<b>08/10/89</b>	<b>Japan</b>			<b>English</b>	
		<b>WO 90/07023</b>	<b>06/28/90</b>	<b>PCT</b>			<b>English</b>	
		<b>JP 08-115652</b>	<b>05/07/96</b>	<b>Japan</b>			<b>Abst. &amp; Transl.</b>	
OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)								
		<b>R.T.K. Baker et al., "Formation of Carbonaceous Deposits from the Platinum-Iron Catalyzed Decomposition of Acetylene," 37 J. Catal. 101-105 (1975).</b>						
		<b>R.T.K. Baker, "Catalytic Growth of Carbon Filaments," 27 (3) Carbon 315-323 (1989).</b>						
		<b>S. Iijima, "Helical Microtubules of Graphitic Carbon," Nature, Vol. 345, 56-58 (1991).</b>						
		<b>T. W. Ebbesen et al., "Large-Scale Synthesis of Carbon Nanotubes," Nature, Vol. 358, 220-222 (1992).</b>						
		<b>W. A. DeHeer et al., "Aligned Carbon Nanotube Films: Production and Optical and Electronic Properties," Science Vol. 268, 845-847 (1995).</b>						
EXAMINER				DATE CONSIDERED				

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

FORM PTO 1449 (modified)  U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE  LIST OF REFERENCES CITED BY APPLICANT(S) (Use several sheets if necessary)			ATTY DOCKET NO. <b>03500.015727.</b>		APPLICATION NO. <b>09/941,780</b>		
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U.S. PATENT DOCUMENTS							
*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
		5,577,943	11/96	Vickers et al.	445	24	
		2002/136896	09/26/00	Takikawa et al.	428	408	
		5,192,240	03/09/93	Komatsu	445	24	
		5,214,346	05/25/93	Komatsu	313	309	
		5,382,867	01/17/95	Maruo et al.	313	309	
		5,612,587	03/18/97	Itoh et al.	313	309	
		6,313,572	11/06/01	Yamada	313	310	
FOREIGN PATENT DOCUMENTS							
		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT
		0 758 028 A2	02/12/97	EPO	D01F	9/127	English
		WO 98/05920	02/12/98	PCT	G01B	7/34	English
		0 394 698 A2	10/31/90	EPO	H01J	1/30	English
		2000/277003	06/10/00	Japan	H01J	9/02	No
OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)							
		T. Guo et al., "Catalytic Growth of Single- Walled Nanotubes by Laser Vaporization," Ch m Phys. Lett., Vol. 243, 49-54 (1995).					
		A. G. Rinzler et al., "Unraveling Nanotubes: Field Emission from an Atomic Wire," Science, Vol. 269, 1550-1553 (1995).					
		W. A. DeHeer et al., "A Carbon Nanotube Field-Emission Electron Source," Science, Vol. 270, 1179-1180 (1995).					
		T. Kyotani et al., "Preparation of Ultrafine Carbon Tubes in Nanochannels of an Anodic Aluminum Oxide Film," Chem. Mater., Vol. 8, 2109-2113 (1996).					
		A. Thess et al., "Crystallin Ropes of Metallic Carbon Nanotubes," Science, Vol. 273 483-487 (1996).					
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FOREIGN PATENT DOCUMENTS						
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT
	<b>0 797 233 A2</b>	<b>09/24/97</b>	<b>EPO</b>	<b>H01J</b>	<b>1/30</b>	<b>English</b>
	<b>0 980 089 A1</b>	<b>02/16/00</b>	<b>EPO</b>	<b>H01J</b>	<b>1/30</b>	<b>English</b>
	<b>0 986 084 A2</b>	<b>03/15/00</b>	<b>EPO</b>	<b>H01J</b>	<b>1/30</b>	<b>English</b>
	<b>1 117 118 A1</b>	<b>07/08/01</b>	<b>EPO</b>	<b>H01J</b>	<b>1/312</b>	<b>English</b>
	<b>0 716 439</b>	<b>06/12/96</b>	<b>EPO</b>	<b>H01J</b>	<b>3/02</b>	<b>English</b>
	<b>2-112125</b>	<b>04/24/90</b>	<b>JAPAN</b>	<b>H01J</b>	<b>1/30</b>	<b>Abst. &amp; corresponding U.S. Patent 4,956,578</b>
OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)						
	<b>H. Dai et al., "Single-Wall Nanotubes Produced by Metal-Catalyzed Disproportionation of Carbon Monoxide," Chem. Phys. Lett., Vol. 260, 471-475 (1996).</b>					
	<b>H. Dai et al., "Nanotubes as Nanoprobes in Scanning Probe Microscopy," Nature, Vol. 384, 147-150 (1996).</b>					
	<b>A. C. Dillon et al., "Storage of Hydrogen in Single- Walled Carbon Nanotubes," Nature, Vol.386, 377-379 (1997).</b>					
	<b>W.P. Dyke et al., "Field Emission", <i>Advances in Electronics and Electron Physics</i>, Vol. 8, (1956) pp. 89-185</b>					
	<b>C.A. Spindt et al., "Physical Properties of Thin-Film Field Emission Cathodes with Molybdenum Coatings", <i>Journal of Applied Physics</i>, Vol. 47, No. 12 (1976), pp. 5248-5263</b>					
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	<b>3-20941</b>	<b>01/29/91</b>	<b>JAPAN</b>	<b>H01J</b>	<b>31/12</b>  <b>Abst. &amp; corresponding U.S. Patent 5,185,554</b>
	<b>5-211029</b>	<b>08/20/93</b>	<b>JAPAN</b>	<b>H01J</b>	<b>1/30</b>  <b>No</b>
	<b>8-264109</b>	<b>10/11/96</b>	<b>JAPAN</b>	<b>H01J</b>	<b>1/30</b>  <b>Abst.</b>
	<b>9-82214</b>	<b>3/28/97</b>	<b>JAPAN</b>	<b>H01J</b>	<b>1/30</b>  <b>Abst. &amp; European Equivalent 0 716 439</b>
	<b>1 113 478 A1</b>	<b>7/02</b>	<b>EPO</b>		
	<b>1 122 344 A3</b>	<b>8/01</b>	<b>EPO</b>		
	<b>A0 913 508</b>	<b>05/06/99</b>	<b>EPO</b>	<b>D01F</b>	<b>9/127</b>  <b>English</b>
	<b>09-188600</b>	<b>07/22/97</b>	<b>Japan</b>	<b>C30B</b>	<b>29/62</b>  <b>Abst.</b>
	<b>A1 443 865</b>	<b>08/28/91</b>	<b>EPO</b>	<b>H01J</b>	<b>21/10</b>  <b>English</b>
OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)					
	<b>C.A. Mead, "Operation of Tunnel-Emission Devices", <i>Journal of Applied Physics</i>, Vol. 32, No. 4, (1961), pp. 646-652</b>				
	<b>Toshiaki Kusunoki et al., "Fluctuation-Free Electron Emission from Non-Formed Metal-Insulator-Metal (MIM) Cathodes Fabricated by Low Current Anodic Oxidation", <i>Japanese Journal of Applied Physics</i>, Vol. 32 No. 11B, (1993), p. L1695-1697</b>				
	<b>M.I. Elinson et al., "The Emission of Hot Electrons and the Field Emission of Electrons from Tin Oxide", <i>Radio Engineering and Electronic Physics</i>, (1965) pp. 1290-1296</b>				
	<b>G. Dittmer, "Electrical Conduction and Electron Emission of Discontinuous Thin Films", <i>Thin Solid Films</i>, Vol. 9, (1972) pp. 317-329</b>				
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	<b>04-212236</b>	<b>03/08/92</b>	<b>Japan</b>	<b>H01J</b>	<b>1/30</b>
	<b>03-295131</b>	<b>12/26/91</b>	<b>Japan</b>	<b>H01J</b>	<b>1/30</b>
	<b>A2 535 953</b>	<b>04/07/93</b>	<b>EPO</b>	<b>H01J</b>	<b>1/30</b>
	<b>05-159696</b>	<b>06/25/93</b>	<b>Japan</b>	<b>H01J</b>	<b>1/30</b>
	<b>05-198253</b>	<b>08/06/93</b>	<b>Japan</b>	<b>H01J</b>	<b>1/30</b>
	<b>05-274997</b>	<b>10/22/93</b>	<b>Japan</b>	<b>H01J</b>	<b>1/30</b>
	<b>11-232997</b>	<b>08/27/99</b>	<b>Japan</b>	<b>H01J</b>	<b>1/30</b>
	<b>A1 936 650</b>	<b>08/18/99</b>	<b>EPO</b>	<b>H01J</b>	<b>3/02</b>
	<b>10-289650</b>	<b>10/27/98</b>	<b>Japan</b>	<b>H01J</b>	<b>1/30</b>
	<b>A1 871 195</b>	<b>10/14/98</b>	<b>EPO</b>	<b>H01J</b>	<b>1/30</b>
OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)					
	<b>M. Hartwell et al., "Strong Electron Emission from Patterned Tin-Indium Oxide Thin Films", IEEE Trans. Ed. Conf., (1983) pp.519-521</b>				
	<b>Hisashi Araki et al., "Electroforming and Electron Emission of Carbon Thin Films, Journal of th Vacuum Society of Japan, 1983 (with English Abstract on p. 22)</b>				
	<b>U.S. PATENT APPLICATION PUBLICATION NO. US 2002/0009637A1, 1/24/02 (Murakami et al.)</b>				
	<b>U.S. PATENT APPLICATION PUBLICATION NO. US 2001/0006232A1, 7/5/01 (Choi et al.)</b>				
	<b>Rodriguez et al., "Catalytic Engineering of Carbon Nanostructures," Langmuir 11, 3862-3866 (1995).</b>				
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